

	Supplie	Line Item No	Rei No	Term	s Purchased Item	Description	For Part No	Project	Equipment	Order	Due Date	Received	Accounting Job No	Serial)No	Status	Receive	Price/Unit	Aging	Past	Total	Sup
0038420	TWM001- VU	- 1	1	Net 30	M4130NT1.000W.12	4130 Round Tube	140				11/28/2017	-		/		Date		Days	Due	TOTAL	Na
	100			- 3	THE REAL PROPERTY.	1.00 X .120Wall : MATERIAL: AISI				-0	11/20/2017	V 20	1 0	S017136	Stock	12/4/2017	\$ 2.88 / ft	0		\$58.5	6 TW
					1	4130N STEEL															Meta
						TUBING AS PER															
- 1			- 1			MIL-T-6736 OR AMS 6371/6360/6361/6362															1
		2	\dashv	- 1		6373/6374 receive ft								.	- 1	- 1					1
- 1		4		- 1	M304TR0.759W.049	304 Round Tube .750 X .049W :				160		1 60	1/	S017137	Stock	12/4/2017	\$210/8	0	\rightarrow	*****	774
- 1	- 1	- 1	-		100000000000000000000000000000000000000	MATERIAL: AISI											V2.107 R	ď		\$336.00	Meta
	- 1	- 1	- 1		1	304/316 SS SEAMLESS ROUND						- 1			- 1	- 1	- 1				
	- 1	- 1				TUBING AS PER	- 1	- 1	- 1		- 1	- 1		- 1	- 1		- 1				
	- 1					ASTM A213 OR ASME SA213 OR		- 1	- 1		- 1						- 1				
	- 1	\rightarrow	_			ASTM A269 receive ft			- 1		- 1			.			- 1				
	- 1	3		- 4	M304TR0.500W.049	304 Round Tube .500				40		40	V	2017420	ta ale						
			-			X .049W : MATERIAL: AISI		- 1	- 1		- 1	- 40		5017138	TOCK 1	2/4/2017 \$	2.80 / ft	0		\$112.00	
- 1	- 1			- 1		304/316 SS			1		- 1		- 1	- 1							Metal
	- 1			- 1		SEAMLESS ROUND TUBING AS PER				- 1											
	- 1		1			ASTM A213 OR	- 1	- 1					1	- 1							
	- 1		1	- 1		ASME SA213 OR ASTM A269 receive ft					- 1	- 1					- 1				
	Г	4	7	-	M6061T6T0.625W.065	6061-T6 Round	+	-		20		-1								- 1	
	- 1			-	TAKEN PLANTS	Tube .625 X.065W :				36		V 36	Us	017139 S	ock 12	/4/2017 \$	3.15 / ft	0		\$113.40	
						MATERIAL: 6061- T6/T62/T6510/T6511			- 1						- 1	1			-	1	Metals
-						SEAMLESS TUBING	-	- 1			- 1		- 1			- 1	1				
1	- 1					AS PER WW-T-700/8 OR QQ-A-200/8 OR		- 1													
	- 1	-	1			QQ-A-225/8 OR AMS		- 1					- 1					- 1			
		1	1			080 OR AMS 40 82 OR AMS 4083 OR	-			- 1		- 1				- 1					
- 1	- 1		1		A	ISTM B210 OR		- 1				- 1	١,				- 1	- 1			
		5	1	M	6061T6T0.375W.058	STM B241 receive ft	+	-				_/	/								
	- 1		1			ube .375 X.058W :			- 1	24		24	V S0	17140 Sto	ck 12/4	V2017 \$ 2.	15 / ft	0	+	\$51.60 T	W
			1			ATERIAL: 6061- 6/T62/T6510/T6511															letals
	- 1		1		s	EAMLESS TUBING		- 1			- 1	- 1				- 1	- 1		1		
	- 1					S PER WW-T-700/8		- 1				- 1									
1	- 1				Q	R QQ-A-200/8 OR Q-A-225/8 OR AMS		- 1			- 1	- 1				- 1					
		1		-		80 OR AMS 40 82 R AMS 4083 OR	1					- 1									
					AS	TM B210 OR		- 1				- 1	- 1						1		
	-	6		We		TM B241 receive ft	1					1	,				-		1		
		٦ ١		Mo	061T6T0.625W.125	61-T6 Round Tube				12		12	U S017	7141 Sto	k 12/4/	2017 \$ 5.1	5 / ft	0	-	61.80 TV	V
	- 1	11			MA	TERIAL: 6061-			1		- 1								1		etals
1		17		-		T62/T6510/T6511 AMLESS TUBING		-1-				- 1				- 1					
	- 1				AS	PER WW-T-700/8	1	- 1	- 1		- 1	- 1	- 1								
1						QQ-A-200/8 OR -A-225/8 OR AMS	1	- 1													
1		11			408	0 OR AMS 40 82							- 1								
1	- 1					AMS 4083 OR M B210 OR							- 1					1			
	-	Н			481	M B241 receive ft															
1	7	11	4	M41		0 Round			1 2	24	\vdash	V24	V S0171	142 Stock	12/4/2	047 644 4	212			_	
						e .750 X.049W ; TERIAL: AISI					23			12/0100	123472	3 11.4	o/it		\$27	4.46 TW Met	
1					4130	IN STEEL		1		1	24	-						1 1			uio
1						ING AS PER T-6736 OR AMS				1	-							1 1			
					6371	/6360/6361/6362					-				1	1		1 1			
	8	\dashv	sin	1/413	NAME AND ADDRESS OF THE OWNER, TH	/6374 receive ft				_							1				
	1	- 1		101-113		Round .750 X.083W :		1	20		1 4	20	S01714	43 Stock	12/4/20	17 \$ 3.85 /	ft (\$78	.28 TW	-
		1			MATI	ERIAL: AISI N STEEL			1						1					Meta	als
		-		1		NG AS PER															
				1	MIL-T	-6736 OR AMS						-									
				1		6360/6361/6362 6374 receive ft					1	1			1		-				





ORDER NO.: 80895542 FROM: CHIC PAGE 1

PREPAID

DART AEROSPACE LTD
1270 ABERDEEN ST
HAWKESBURY ON
CANADA

CN K6A 1K7

CUST NUMBER: 1203820 NET WGT: 121.060 REQ.DATE: 11/28/17 CONFIRMED

SHIP TO:

DART AEROSPACE LTD 1270 ABERDEEN ST

HAWKSBURY ON

ONTARIO CANADA

CN K6A 1K7

SALESPERSON: DONNA SMALLEY
TERMS: NET 30 DAYS
F.O.B.: SHIPPING POINT FREIGHT:
CUST ORD NO.: PO038420 RELEASE NO.:
RECEIVING PHONE:

11/22/17 COMMON CARRIER

LINE ITEM DESCRIPTION

0001 33364 SMLS CD 4130 RD 6736 1 X .120

WIDTH

LENGTH 17/24 FT

CLN#

ODE QTY

INVOICE OTY 20.333 FT

SHIPPED QTY WT 20.333 FT 22.936

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00 PO:49371988 HT:606333 PC: 1 CUSTOMER QTY: UOM
MLT:GERMANY MFG:GERMANY SLB/CL:1639142

0002 36860 SMLS CD 304/L A269 3/4 OD X .049 WA

20' CL -

CLN# ORD QTY 160.000 FT

INVOICE QTY SHIPPED QTY 160.000 FT

PCS

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 2B999.g Export License: NLR Expiration Date: 0/00/00 PC: 8 CUSTOMER QTY: UOM

MLT:CHINA MFG:CHINA SLB/CL:-

MFG:CHINA

SLB/CL:-

0003 36506 SMLS CD 304/L A269 1/2 OD X .049 WA -

CLN# ORD QTY

ORD QTY 40.000 FT INVOICE QTY 40.000 FT 40.000 FT 9.437

PCS

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 2B999.g Export License: NLR Expiration Date: 0/00/00 PO: 49361319 HT YX1604531 PC: 2 CUSTOMER QTY: UOM SLB/CL:-

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE THANK YOU FOR THIS ORDER PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL REVIEW.

http://www.twmetals.com/invoice-terms.html





ORDER NO.: 80895542 FROM: CHIC PAGE 2

DART AEROSPACE LTD

1270 ABERDEEN ST

HAWKESBURY ON

CN K6A 1K7

CUST NUMBER: 1203820 NET WGT: 121.060 REQ.DATE: 11/28/17 CONFIRMED

SHIP TO:

DART AEROSPACE LTD 1270 ABERDEEN ST

HAWKSBURY ON

ONTARIO CANADA

CN K6A 1K7

SALESPERSON:

TERMS: F-0.B.:

SOLD TO:

CANADA

DONNA SMALLEY

NET 30 DAYS F-O.B.: SHIPPING POINT CUST ORD NO.: POU38420

0004 42558 D6061-T6 5/8 OD X .065 WA

SHIP BY:

11/22/17

VIA: COMMON CARRIER PREPAID

FREIGHT: RELEASE NO.:

RECEIVING PHONE:

WIDTH

LENGTH

12 FT ML

CLN# ORD QTY INVOICE QTY 36.000 FT

36.000 FT /

SHIPPED QTY 36.000 FT,

** 1 TEST REPORTS REQUIRED **

LINE ITEM LIGCRIPTION

** 1 CERTS REQUIRED **

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00 PO:49369003 HT:F002408380002 PC: 3 CUSTOMER QTY: UOM MLT:UNITED STATES MFG:UNITED STATES /SLB/CL:223156

12 FT MI.

CLN#

ORD QTY 24.000 FT

INVOICE QTY 24.000 FT

SHIPPED QTY 24.000 FT

WT

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: EAR99

PO:49376296 HT:F002504860001 PC: 2 CUSTOMER OTY:
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:224194

Export License: NLR Expiration Date: 0/00/00

0006 42588 D6061-T6 5/8 OD X .125 WA

0005 41952 D6061-T6 3/8 OD X .058 WA

12 FT MI.

ORD QTY 12.000 FT

12.000 FT / SHIPPED QTY IMVOICE QTY

12.000 FT /

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00 PO:49370848 HT:F002436350002 PC: 1 CUSTOMER QTY: UOM MLT:UNITED STATES MFG:UNITED STATES SLB/CL:223458

17-19

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE THANK YOU FOR THIS ORDER PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL REVIEW.

http://www.twmetals.com/invoice-terms.html





ORDER NO.: 80895542 FROM: CHIC PAGE 3

PREPAID

LENGTH

17/24 FT

DART AEROSPACE LTD

1270 ABERDEEN ST

CUST NUMBER: 1203820 NET WGT: 121.060 REQ.DATE: 11/28/17 CONFIRMED

SHIP TO:

DART AEROSPACE LTD 1270 ABERDEEN ST

HAWKSBURY ON

ONTARIO CANADA

CN K6A 1K7

SALESPERSON: DONNA SMALLEY

CANADA

HAWKESBURY ON

SOLD TO:

TERMS: F.O.B.:

CUST ORD NO.:

NET 30 DAYS

SHIPPING POINT

CN K6A 1K7

PO038420

SHIP BY: 11/22/17

VIA: FREIGHT: COMMON CARRIER

WIDTH

RELEASE NO.:

RECEIVING PHONE:

LINE ITEM DESCRIPTION

0007 33047 CDS 4130 6736 3/4 X .049

SHIPPED QTY

23.917 FT L

** 1 TEST REPORTS REQUIRED **

24.000 FT

** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date PO:49371988 HT:606338 PC: 1 CUSTOMER QTY:

INVOICE OTY

23.917 FT

Expiration Date: 0/00/00

MLT: GERMANY

MFG:GERMANY

SLB/CL:1639142

0008 33096 SMLS CD 4130 6736 3/4 OD X .083 WA

17/24 FT

CLN#

WT

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00 PO: 49365374 HT: 603114 PC: 1 CUSTOMER QTY: UOM

MLT: GERMANY

MFG: GERMANY

SLB/CL:1634562

BROKERS KUEHNE AND NAGEL LTD

AREA TYPE OF PKG

----- PACK INFO -----PKGS GRS WEIGHT

WIDTH

LENGTH HGHT

REDDICRATE

1.000 221.000

24.5000

YRC REDDICRATE

1.000

20.5000

2.000 221.000

BY: LM

1

THANK YOU FOR THIS ORDER PRODUC

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL

http://www.twmetals.com/invoice-terms.html





ORDER NO.: 80895542

FROM: CHIC

PAGE 4

CUST NUMBER: 1203820 NET WGT:

SOLD TO:

DART AEROSPACE LTD

1270 ABERDEEN ST

HAWKESBURY ON

CANADA

CN K6A 1K7

SALESPERSON:

DONNA SMALLEY NET 30 DAYS

TERMS: F.O.B.:

CUST ORD NO.:

SHIPPING POINT

PO038420

LINE ITEM DESCRIPTION

RT 000-

121.060 REQ.DATE: 11/28/17 CONFIRMED

SHIP TO:

DART AEROSPACE LTD 1270 ABERDEEN ST

HAWKSBURY ON

ONTARIO CANADA

CN K6A 1K7

SHIP BY:

VIA:

11/22/17

COMMON CARRIER

FREIGHT:

PREPAID

RELEASE NO.:

RECEIVING PHONE: WIDTH

LENGTH

UNLOAD TYPE: NONE SPECIFIED

817-10-4



DART AEROSPACE LTD

1270 ABERDEEN ST



Packing Slip

ORDER NO.: 80895542 FROM: CHIC

PAGE 5

SOLD TO:

CUST NUMBER: 1203820 NET WGT:

CN K6A 1K7

121.060 REQ.DATE: 11/28/17 CONFIRMED

SHIP TO:

DART AEROSPACE LTD

1270 ABERDEEN ST

HAWKSBURY ON

ONTARIO CANADA

CN K6A 1K7

SALESPERSON:

CANADA

TERMS:

F.O.B.:

VTA:

HAWKESBURY ON

DONNA SMALLEY

NET 30 DAYS

SHIPPING POINT

CUST ORD NO .: PO038420

COMMON CARRIER

FREIGHT: PREPAID

RELEASE NO.:

RECEIVING PHONE:

SHIP BY:

11/22/17

235 TUBEWAY

CAROL STREAM

IL 60188

"TW Metals MSDS data is available on our web site at www.twmetals.com. MSDS data can be found under the Technical Resources Tab, Product Statistics & Data and the TW Metals MSDS's heading. If you do not have web site access you may telephone 610-458-1300 and we will mail or fax a copy of our current MSDS data to your location."

"CERTIFICATE OF CONFORMANCE"

"TW Metals certifies that the material supplied on this purchase order and contained in the heat/lot number referenced above has been manufactured, inspected, and tested in accordance with the material specification. These records are on file at TW Metals. Packaging material for shipments to Europe and China consists of manufactured wood products and complies with the European emergency measures for coniferous non-manufactured wood packing material"

Authorized Test Report Clerk

Date: 11/22/17

These commodities have been exported from the United States in accordance with the U.S. export control laws, export administrations regulations. Diversion contrary to U.S. law prohibited.



Dart Hawkesbury 1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada

PURCHASE ORDER PO038420

Tel (613) 632-5200

TWM001-VU Supplier:

TW Metals PO Box 933014

Altanta, GA 31193-3014 USA

Phone: 585 768 5600 Fax: 585 768 5601

PO No:

PO038420

PO Date:

11/20/17

Due Date:

11/28/17

Purchase Order

Revision:

Revision Date:

Ship-To Contact:

Phone:

Ship To:

1270 Aberdeen Street

Hawkesbury

ON

K6A 1K7 Canada

Phone: 613-632-5200

Via:

Ground

Pymt Terms:

Net 30

Freight Terms: **Special Comments:**

S. Section			/		Items						
Line Item	DOMESTIC OR	Rev	Description	Item Tax	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1	M4130NT1.000W.12&		4130 Round Tube 1.00 X .120Wall : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	20 ft	203 ³	1	\$2.8858/ft	\$57.72
2	M304TR0.750W.049		304 Round Tube .750 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASTM A269 receive ft		Firmed	11/28/17	160 ft	0 ft	160 ft	\$2.10/ft _t	\$336.00
3	M304TR0.500W.049		304 Round Tube .500 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASTM A269 receive ft		Firmed	11/28/17	40 ft	0 A	40 ft	\$2.80/ft	\$112.00
4	M6061T6T0.625W.065		6061-T6 Round Tube .625 X.065W : MATERIAL: 6061- T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR		Firmed	11/28/17	36 ft	364	36 ft	\$3.15/R ⁶	\$113.40



Dart Hawkesbury 1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada

PURCHASE ORDER PO038420

Tel (613) 632-5200

					Items						
Line Item		Rev	Description	Item Tax	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extende Price
		/	ASTM B241 receive ft				/				/
5	M6061T6T0.375W.058		6061-T6 Round Tube .375 X.058W : MATERIAL: 6061- T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft		Firmed	11/28/17	/24 ft	on AF	24 ft	\$2.15/ft	\$ 51.6
6	M6061T6T0.625W.125		6061-T6 Round Tube 0.625 X.125W : MATERIAL: 6061- T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 eceive ft		Firmed	11/28/17	12 ft	Of DF	12 ft	\$5.15/ft	\$61.80
7	M4130NT0.750W.049	en et en greetlijke en de eel fan de een de stat de een de geep en	4130 Round Tube .750 X.049W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	24 ft	0 ft	24 ft	\$11.4754/ft	\\$2 75.41
8	M4130NT0.750W.083	- - - - -	4130 Round Tube .750 X.083W MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	20 ft	26.?	20 ft 333	\$3.85/ft	\$77.000 \$7.00 \$4.00

Order Notes

Procurement Quality Clauses A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system



Dart Hawkesbury 1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada

PURCHASE ORDER PO038420

Tel (613) 632-5200

Order Notes

A042 dart notification by supplier A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing (Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 11/20/17 2:08 PM DART.LAVOIE.CHANTAL

Bentieler Steel/Tube GmbH Postfach 13 40 33043 Paderbom Deutschland Tel.: +49.5254.81-0 Fex: +49.5254.13666

BENTELER \

Steel/Tube

4

760 Constitution Drive EXTON PA 19341 USA	Tw Metals	Pentelar, Steel/Tubo GmbH - Postfach 1340 - 23043 Paderbara : Deutschland	CERTIFICAT DE RECEPTION EN 10204-3.1 EN 10204:2005-01	ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1
Benteler Auftrags-Nr.: Benteler Order No.: No. de commande Benteler:	No. de commande du client:	Purchase Order No.:	No. du document:	Dokument-Nr.:
1639142		46005343 TW M49371988		41-1023590/001/Z
Herstellerzeichen: Manufacturer's brand: Marque du producteur:		Hersteller:	No. du certificat:	Prūf-Nr.:
ind:	IPED 2014/88/EU CERTIFIED BY TUEV NORD CERT;	Warmrohrwerk/Zieherei	Page: Page:	Blatt: 1/ 4

Produkt:	Versanda Dispatch I No. d'avis	Benteler A Benteler C
Produkt: NAHTLOSE STAHLROHRE Product: SEAMLESS STEEL TUBES	Versandanzeigen Nr.: Dispatch Note No.: No. d'avis d'expédition:	Benteler Auftrags-Nr.; Banteler Order No.; No. de commande Benteler;
TUBES	4114198	1639142
Stahlerschmelzungsverfahren: Staelmaking process:	Stempel des Abnahmebesuftragten: Stamp of the inspection representative: Poinçon du contrôleur:	Herstellarzeichen: Mainufacturer's brand: Marque du producteur:
n: ELEKTROSTAHL ELECTRIC.FURNAC	iten: WA ntative:	4

Produkt: NAHTLOSE STAHLROHRE Product: SEAMLESS STEEL TUBES Produit: TUBES D' ACIER SANS SOUDURE	Versandanzeigen-Nt.: 4114198 Dispatch Note No.: No. d'avis d'expédition:	No. De Collin ande Benteler:
Stahlerschmelzungsverfahren: ELEKTROSTAHL Staelmaking process: ELECTRIC FURNACE	Stempei des Abnahmebaauftragten: WA Stamp of the inspection representative: Poinçon du contrôleur:	Marque du producteur:

Produkt: Product: Produit:	
NAHTLOSE STAHLROHRE SEAMLESS STEEL TUBES TUBES D'ACIER SAINS SOUDURE	The state of the s
Stablerschmelzungsverfahren: Staelmaking process: Procede, d'élaboration de l'acier:	Poinçon du contrôleur:
melzungsverfahren: ELEKTROSTAHL ig process: ELECTRIC.FURNACE èlaboration de l'acier: FOUR ELECTRIQUE	

Maße - Toleranzen: AMS	Conditions de livraison:		Lieferbedingungen: AMS:
 AMS 2253E-83: Aircraft Type Seamless Cold Circles		The Transport of the American Type I., Amigosou Rev. M., AMS 2301K	AMS-T-6736B-08 Type 1, ASTM-A 519-2006 MI, T. 6736B T

County of Hotelson	
Maße - Toleranzen:	AMS 2253E-83. Aircraft Type Seamless Cold Elichad
Dimensions-tolerances:	The Country Countries, Cold Fillished
Dimensions-tolérances:	
Stahlsorte:	GRADE 4130
Steel grade:	
Nuance d'acier:	
Lieferzustand:	Condition N

État de livraison:	
Produktkennzeichnung:	FSD: BENTELER AMS6360M-AMS-T-6736 R 1-MII -T-6736 B 1 AMS 32017 4720 C - 1517 AMS 32017 4720 C - 1517 AMS 32017 AMS
Product marking:	CD AQ S DIMENSIONS WA GERMANY
Marquage du produit:	

Delivery condition:

AEZ = Ātzúnenbeschríhung, Etching lisk-marking, Gravure à l'ancre - FK = Farbénnselchrung, color marking, marquage par couleur - FS = Farbénhabinieurg, paint stercilling, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - LX = Lisentenzelchrung, taser marking, Marquage baser - PX = Etkettenbunnzparten, insprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel, die stamp, marquage par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = Pràgistenpel par pointure - FSD = Farbénhabitucker, Color jet printer, imprimente à jet d'encre de couleur - PX = PX = PRÀGISTENPEL - PX = PRÀGI



BENTELER 🛡

BENTELER ♥ Steel/Tube	Blatt: 21 4 Page: Page:	Rohr-NrGruppe Vielfachlängen Tube number group Multiple lengthis s Série de no. des tubes Longueurs multiples	
ž)	Prūf-Nr.: Inspection No;: No, du certificat:	Prüfdruck Test pressure Pression:d'épreuve	
		Schmelzen-Nr. Prüfdruck Heat No. Test pressur No. de coulée. Pressional'e	(606333 /04
	41-1023590/001/Z	Gewicht Weight Polds Ibs	4912
	Dokument-Nr.: Document No.: No. du document:	Gesamtjänge Gewicht Langth total Weight Longueur totale Polds Teet lbs	4393,70
Beinteler Steel/Tube GmbH Postfach 13.40 33043 Paderborn Deutschland Tel.: +49.5254.81-0 Fax: +49.5254.13666	ABNAHMEPRÜFZEUGNIS EN 10204-3,1 INSPECTION CEMTICIATE EN 10204-3,1 CERTIFICAT DE RECEPTION EN 10204-3,1	* 9 8	0025 216 1.000" 0.D. * 0.120" WT 20 FT 24 FT

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/ Heat analysis
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Pos. Schme Zen-Ni. C Si MN	יייייייייייייייייייייייייייייייייייייי											
0,52 0,008 0,002 0,87 0,18 0,11 0,12 MN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,18 0,11 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width. <= notch depth; notch length min. 2 x transducer width (max. 50 mm)	Pos.	ı	O	SI	MN	۵	S	S	MO	Z	CO	
0,52 0,008 0,002 0,87 0,18 0,11 0,12 MIN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,18 0,11 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth; 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm)	Hem	Heat No.										
0,52 0,008 0,002 0,87 0,18 0,11 0,12 MN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,13 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max, 50 mm)	Poste											
MN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,18 0,11 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle: Dimensions examination: Vérification des la nuance: Metification des la nuance:	0025	606333	0,330	0,250	0,52	0,008	0,002	18'0.	0,18	0,11	0,12	
MN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,18 0,11 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle: Dimensions examination: Vérification des la nuancie: Vérification des dimensions	Produk	ctanalyse [%] / Pro	duct analysis	[%] / Analyse	s sur produit	[%]						
MN P S CR MO NI CU 0,50 0,008 0,001 0,89 0,18 0,11 0,13 ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle: Dimensions examination: Vérification des la nuance: Vérification des dimensions	Pos.											
ET-test: acc. to ASTM-A 450; ET - Test method: acc, to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle: Material conformity test: Weiffication de la nuance: Weiffication de dimensions examination:	Kem	Heat No.	Ö	S	N	۵.	S	CR	MO	Z	CC	
ET-test: acc. to ASTM-A 450, ET - Test method: acc, to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max, 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle; Material conformity test: Weiffication de la nuance:	Poste											
ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max, 50 mm) SED Material verwechslungsprüfung: PASSED Maßkontrolle; Material conformity, tost: Dimensions examination: Vérification des dimensions	0025	606333	0,320	0,260	05.0	0,008	0,001	68'0	0,18	0,11	0,13	
Störungsfrei geprüft: ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; five texted: ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections; asi non destructif: Notch depth; 0,30 mm; notch width. <= notch depth; notch length min. 2 x transducer width (max, 50 mm) PASSED Material verwechslungsprüfung: PASSED Maßkontrolle: Material verwechslungsprüfung: Dimensions examination: Vérification des la nuance:	rüferç	gebnisse / Test resu	lts:/ Résultan	s des essais								
### 10246-3; Imperfections; Entransmitter	Die Ro	ohre wurden zerst	örungsfrei	geprüft:		ET-test: act	S. to ASTM	-A 450; ET	- Test met	hod: acc, t	o ASTM-E 309; for imperfections:	PASSED
Notch depth: 0,30 mm; notch width <= notch depth; notch length min. 2 x transducer width (max. 50 mm) PASSED Materialverwechslungsprüfung: PASSED Maßkontrolle: Material conformity test: Dimensions examination: Vérification des dimensions	The tub	ses are non destructive	e tested:			E.T-test: ET	with rotation	ng pancake	coils; acc	ording to El	N 10246-3; imperfections:	
PASSED Materialverwechslungsprüfung: PASSED Maßkontrolle: Material conformity test: Vérification de la nuance:	Les tub	es ont passé un essai	non destruct			Notch dept width (max	h: 0,30 mm	, notch wi	dth. <= pc	tch depth;	notch length min. 2 x transducer	
Material conformity tast: Vérification de la nuance:	Auger	nsichtkontrolle:		PAS	SED	Materialver	wechslung	sprüfung:	PAS	SSED	Maßkontrolle:	PASSED
Weification de la nuance:	Visual I	Inspection:				Material confo	rmity test:				Dimensions examination:	
	Examer	n visuel;				Vérification de	t la nuance:				Verification des dimensions.	

Ergebnisse der mechanischen Prüfung / Results of mechanical Testing / Résultats des essals mécaniques.

Die Probennahme erfolgte an Vielfachlängen. The sampling was carried out on multiple lengths. L'echantillonage etait realise aux longueurs multiples.



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BENTELER

Steel/Tube

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Blatt: Page: Page:

No. du certificat: Inspection No.: Prof-Nr.: 41-1023590/001/Z Dokument-Nr.: Document No.: No. du document: ABNAHMEPRÜFZEUGNIS EN 10204-3.1 Tel.: +49.5254.81-0 Fex: +49.5254.13666 CERTIFICAT DE RECEPTION EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1

Benteler Steel/Tube GmbH Postfach 13 40 33043 Paderborn Deutschland Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Eprouvette a section complete

)								
Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	ssung	Streckgrenze	Zugfestigkeit	Dehnung	
Item	Specimen No.	Heat No.	Specimen dimensions.	nsions	Yield strangth	Tensile strangth	Elongetion	
Poste	No. de l'éprouv.	No. de coulée	Dimensions de	l'éprouv.	Dimensions de l'éprouv. Limite élastique	Résistance à la traction. Allongement	nn Allongement	
Anforderungen	ngen				Rp.0,2 %	Rm	A2".	1. Formel
Requirements	ts:		mm		KSI	KSI	%	1. Formula
Exigences					MIN 75	MIN.95	MIN 12.00	1. Formule
0025	100000	.606333	25,40 X	3,00	10.0	118	24,00	
0025	00000	606333	25,40 X	3,00	66	118	22,00	
0025	00000	606333	25,40 X	3,00	700	118	22,00	
0.025	000004	606333	25,40 X	3,00	99	11.8	22,00	
.0025	000000	606333	25,40 X	3,00	66	118	24,00	

Randentkohlung / Surface decarburization / Décarburation superficielle

Pos. / Mem / Poste: 0025

decarburization outside and inside max. 0.022 in, partial decarburization outside and inside max. 0,559 mm, without total acc. to AMS-6360, partial decarburization outside max. 0.017 in, partial decarburization inside max. 0.017 in, partial decarburization; partial decarb, out, max.: 0,432 mm; partial decarb, ins. max.: 0,432 mm

Vermerk / Romark / Remarque

Pos. / Item / Poste: 0025

52.225-1 CANNOT COMPLY, DEARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Certificate remarks: The steel grade corresponds to [WILT-6736B, ANIS-6360M, material free from mercury contamination, FAR BAA: Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K / Semi finished product

examination, see appendix page 1 of 1

Pos. / Item / Poste: 0025

Macroscopic examination: acc. to ASTM-E 381

Pos. / Item./ Poste: 0025

Magnetic particle inspec .: acc. to AMS. 2301K/ASTM-E 1444, on prematerial

Pos. / Item / Poste: 0025

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial

Verkäufer(in) / Salas Parsonnal / Personne chargée: Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391





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Steel/Tube

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ABNAHMEPRÜFZEUGNIS EN 10204-3, 1 CRPECTION CERTIFICATE EN 10204-3,1 CERTIFICAT DE RECEPTION EN 10204-3,1

Deutschland Tel.: +49.5254.81-0 Fax: +49.5254.13665

Benteler Steel/Tube GmbH Postfach 13.40 33043 Paderborn Dokument-Nr.: Document No.: No. du document:

41-1023590/001/Z

Pruf-Nr.: Inspection No.: No. du certificat:

Abnahmebeauftragter Inspection representative

TW METALS

F SEP 25 17

Contrôleur

I. A. THOMAS GOLLAN / ICK

ACCEPTED BY

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig. We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature. Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.

Paderborn Schloß Neuhaus, 21.08.2017, TEL.: 05254.81-201766 FAX: 05254.81-201752

BENTELER

1 of 1 de

Page: 41-1023590/001/Z

> Document No.: No. de document:

Inspection Certificate EN 10204.3.1 / appendix Abnahmeprüfzeugnis EN 10204-3.1 / Anhang

Germany Tel.:49.5254.81-0 Fax: 49.5254.13666

Benteler Steel/Tube GmbH Residenzstraße 1 33104 Paderborn Certificat de réception EN 10204-3.1 / appendice

Dokument-Nr.

VON Steel/Tube Blatt:

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fini: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Kongröße Grain size Grosseur de grain (ASTM-E 112)	Hartbarkeit (min. Hardenability (m. Trempabilité (. ASTM	Hartbarkeit (min. Anforderungen) Hardenability (min. requirements) Trempabilité (exigence min.) (ASTM-A 255)	Magnetpul Magnetic part Essai à la pour (AMS 2301 K	Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnetique (AMS 2301 K/ASTM-1444)	ESS:	Makroátzung Macrostructure test Essai de macrostructure (ASTM-E 381)	lest Iclure
		min. 5	J(5/16") min. 35 HRC	J(8/16") min, 28 HRC	F max. 0,34	S max. 0,25	max. S.2	max R:1	тах. С.2
	025	9-10	43	æ	0,020	0,020	8.2	R1	C 2
Decarburization Depth		Outside 0,045 mm	Inside 0,000 mm						
						Н			

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 21,08.2017 Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752



Inspection representative Abnahmebeauftragter Contróleur

Thomas Gollan



MILL TEST REPORT

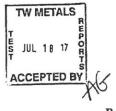
Purchaser.: TW MET.	ALS-Carol S	tream			Certificate	No.: 2017-6-5	9			der a Market de
Contract No.: TWM P						e.: 2017.6.12				
A CONTRACTOR OF THE PARTY OF TH			G 16				012	15/ACTN 4	1260 15	EAW
Commodity: Stainless	Steel Seaml	ess Tubes	Specif	ications (15c/ASME SA	_			EAW
Process: Cold Drawn					Delivery Co	ndition: OD I	Polisi	red to 240	Grit	
Steel Grade	Heat	Number	Lot		Dimensio	nne		Q	uantity	
Steel Grade	Heat	1 Seminari	Numb	er	Dimensi			Pieces]	Feet
TP304/TP304L	(YXI	108-593	3-82	2	3/4"x0.049	"x20"		250	5	,000
		Che	emical (Compositi	on by Weigh	t (%)				
Element	С	Mn	P	S	Si	Cr		Ni	Mo	Co
Requirements	≤0.035	€2.00	≤0.0	45 ≤0.0	30 ≤1.00	18.00-20.00	8.0	00-12.00		-
Ladle Analysis	0.023	0.70	0.033	2 0.00	0.36	18.50		8.05	-	-
Product Analysis	0.020	0.67	0.034	4 0.00	2 0.34	18.67		8.13	-	-
			Me	chanical l	Properties					
Test Item						(PSI)			trength (1 p / 0.2%	PSI)
Requirements		≥35			≥75,000				30,000	
Test Results		63/64			97,000/98,0				00/42,00	
Test Item		ion of Area (%)	Ha	rdness	Cold Bend Test	Flaring Test	Flattening Test		Flange Test	P.M.I Test
Requirements		-	HR	B≤80	-	22%		=0.09	-	-
Test Results		-	7	6/78	-	Passed		Passed	-	OK
Test Item	Eddy C	urrent Test		iderwater ure Test	Ultrasonic Test	Intergranu Corrosion		Macro	scopic In	spection
Requirements	AST	M E 426		1=	-	ASTM A26	2 E	End Cut	App	earance
Test Results	Pa	assed		-	-	OK		OK		OK
ISO 9001-2008 Certifi	ed by CAS	117 16 OH 005	3-06 R	OS		PED Certifie	d by	SZUTEST	2195-PI	ED-15260

ISO 9001:2008 Certified by CAS 117 16 QU 0053-06 ROS

Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE FAR BAA / DFARS BAA / FAR TAA





By:

James Shi / Manager **Quality Control Department**

We hereby certify that this report is true and correct.

Jiangsu Pufa Stainless Steel Tube Co., Ltd.

No. 99, Xuean Middle Road, Dongchen Town, Rugao City, Jiangsu Province, P.R.China



PUFATM

MILL TEST REPORT

Purchaser.: TW MET	ALC Comple	4			Contigues	No.: 2017-3-3	0			
							0			
Contract No.: TWM	P.O.No.: M49	361319				e.: 2017.3.25				
Commodity: Stainless	Steel Seaml	ess Tubes	Specif	ications	ASTM A213-	15c) ASME SA	213-	15/ASTM	A269-15a	EAW
Process: Cold Drawn					Delivery Co	ndition: OD	Polis	ned to 240	Grit	
0, 10, 1	11	Name have	Lot	t	Dimensi			Q	uantity	
Steel Grade	Heat	Number	Numb	per	Dilliensi			Pieces		Feet
TP304/TP304L	YX1	604-531	1-64	4	1/2"x0.049	"x20"		2000	40	0,000
		Che	mical (Compositi	on by Weigh	t (%)				
Element	C	Mn	P	S	Si	Cr		Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.0	45 ≤0.0	30 ≤1.00	18.00-20.00	8.0	00-12.00	-	
Ladle Analysis	0.017	1.20	0.03	4 0.00	1 0.33	18.20		8.05	•	-
Product Analysis	0.017	1.25	0.03	0.00	2 0.32	18.31		8.12	-	-
			Me	echanical l	Properties		-10-10-50-50-50-50-50-50-50-50-50-50-50-50-50			
Test Item	Elong	ation (% in 2'	Tei	nsile Strength Rm	(PSI)			trength (l p / 0.2%	PSI)	
Requirements		≥35			≥75,000					
Test Results		61/62			97,000/98,0					
Test Item		on of Area (%)	На	rdness	Cold Bend Test	Flaring Test	Fl	attening Test	Flange Test	P.M.I. Test
Requirements		-	HR	RB≤80	-	22%	-	=0.09	-	•
Test Results		-	7	7/79	-	Passed		Passed	-	OK
Test Item	Eddy C	urrent Test	100000	nderwater sure Test	Ultrasonic Test	Intergrand Corrosion		Macro	scopic In	spection
Requirements	AST	M E 426		-		ASTM A26	2 E	End Cut	App	earance
Test Results	Pa	issed		-	-	OK		OK		OK

ISO 9001:2008 Certified by CAS 117 16 QU 0053-06 ROS

PED Certified by SZUTEST 2195-PED-1526002

Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE FAR BAA / DFARS BAA / FAR TAA



By:

James GE

James Shi / Manager Quality Control Department

We hereby certify that this report is true and correct.

Jiangsu Pufa Stainless Steel Tube Co., Ltd.

No. 99, Xuean Middle Road, Dongchen Town, Rugao City, Jiangsu Province, P.R.China





http://Online.KaiserAluminum.com

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER. AZ 85226

CUSTOMER PO NUMBER:		CUSTOMER	PART NUMBER:	PRODUCT DESCRIPTION:		
M49369003-1		42558-14	4	Drawn Seamless T	ube/Pipe	
KAISER ORDER NUMBER:	LINE ITEM:		SHIP DATE:	KAISER LOT NUMBER:	ALLOY	TEMPER:
223156	001		05/22/2017	F00240838	6061	(T6)
WEIGHT SHIPPED:	QUANTITY:		B/L NUMBER:	DIAM/DAF/THKNS:	WIDTH:	LENGTH
610.000 LB	379.000 F	PCS	225370			(12.000 FT/
SHIP TO:				SOLD TO:		
TW METALS INC 235 WEST TUBEW CAROL STREAM, I				TW METALS INC 760 CONSTITUTIO SUITE 204 EXTON, PA 19341		

Actual Physical Properties

REFERÊNCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON%IACS	BEND
F00240838	0001	1	47.2	40.8	19.5	N/A	N/A	N/A
F00240838	/	1	46.9	40.7	19.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	A175 200 L		0.40	0 15	1 20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Maximum	0.80	0.70	0.40	0.13	0.00	0.04	0.20	0.00	NA	NA	NA	0.00	0.00
Minimum	0.40	0.00	0.15	0.00	0.00	10	0.00	.03	.00	.00	.00	.01	.03
D20128	.59	.30	. 22	.05	1.03	.10	. 04	.05	.00	.00			

Applicable Requirements:

Description: OD: 0.6250"; Wall: 0.0650"; Round @ AMS4082P AMS-WW-T-700/6C ASTM B210-12 WW-T-700/6F WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED. This Product Complies to FAR BAA, DFARS BAA, FAR TAA COMPLIES TO DIN EN 10204 JAN 2005
No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA (DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5 TRADE AGREEMENTS).

Plant Serial: 00025044

Kaiser Order Number: 223156



http://Online.KaiserAluminum.com

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER, AZ 85226

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms &conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

TW METALS REPART OF THE PART O

Plant Serial: 00025044 Kaiser Order Number: 223156 Line Item: 001



http://Online.KaiserAluminum.com

FABRICATED PRODUCTS

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER. AZ 85226

OTIANDLLIN, ALOU						
CUSTOMER PO NUMBER:	•	CUSTOMER	PART NUMBER:	PRODUCT DESCRIPTION:		
M49376296-1		41952		Drawn Seamless Tu	ube/Pipe	
KAISER ORDER NUMBER:	LINE ITEM:		SHIP DATE:	KAISER LOT NUMBER:	ALLOX)	TEMPER:
224194	001		09/23/2017	F00250486	6061	T6)
WEIGHT SHIPPED:	QUANTITY:		B/L NUMBER:	DIAM/DAF/THKNS:	WIDTH:	LENGTH:
474.000 LB	585.000 F	PCS	226892			12.000 FT
SHIP TO:				SOLD TO:		
TW-METALS INC 235 WEST TUBEW. CAROL STREAM, II	AY DRIVE			TW METALS INC 760 CONSTITUTIO SUITE 204 EXTON, PA 19341		

Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON%IACS	BEND
F00250486	0001	1	48.0	41.5	17.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot	
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15	
Minimum									NA	NA	NA	0.00	0.00	
D20419	.61	.27	.21	.04	. 98	.09	.05	.03	.00	.00	.00	.01	.02	

Applicable Requirements:

Description: OD: 0.3750"; Wall: 0.0580"; Round @ AMS4082P AMS-WW-T-700/6C ASTM B210-12
WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED. This Product Complies to FAR BAA, DFARS BAA, FAR TAA COMPLIES TO DIN EN 10204 JAN 2005
No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA (DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5 TRADE AGREEMENTS).

Plant Serial: 00026215

Kaiser Order Number: 224194





http://Online.KaiserAluminum.com

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER, AZ 85226

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms &conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

TW METALS

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ACCEPTED BY

Plant Serial: 00026215 Kaiser Order Number: 224194



http://Online.KaiserAluminum.com

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER AZ 85226

CUSTOMER PO NUMBER:		CUSTOMER I	PART NUMBER:		PRODUCT DESCRIPTION:		
M49370848-1		42588			Drawn Seamless Tu		TEMRER:
KAISER ORDER NUMBER:	LINE ITEM:		SHIP DATE:	,	KAISER LOT NUMBER:	ALTOY:	PENIKER.
223458	001		06/27/2017	(1002.0000	6061	T6
WEIGHT SHIPPED:	QUANTITY:		B/L NUMBER:		DIAM/DAF/THKNS:	WIDTH:	TENGTH:
788.000 LB	284.000 F	PCS	225879				12.000 FT
SHIP TO:					SOLD TO:		
TW METALS INC 235 WEST TUBEW CAROL STREAM, I	AY DRIVE L 60188 U	E SA			TW METALS INC 760 CONSTITUTIO SUITE 204 EXTON, PA 19341		

Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON% IACS	BEND
F00243635 F00243635	0001	$\frac{1}{2\omega}$	48.7	42.1	20.0	N/A N/A	N/A N/A	N/A N/A

Chemical Composition (wt%), Aluminum Remainder

							-	m.:	Pb	Bi	Zr	Ea	Tot
LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	20				
Maximum	0 00	0.70	0.40	0 15	1 20	0.35	0.25	0.15	NA	NA		0.05	
Maximum	0.80	0.70	0.40	0.13	0.00	0.00	0.00	0.00	NA	NA	NA	0.00	0.00
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	00		.00	.01	.02
D30206	.59	.29	.22	.03	. 98	.07	. 04	.03	.00	.00	. 0 0		

Applicable Requirements:

Description: OD: 0.6250"; Wall: 0.1250"; Round @ AMS4082P AMS-WW-T-700/6C ASTM B210-12 WW-T-700/6F WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED. This Product Complies to FAR BAA, DFARS BAA, FAR TAA COMPLIES TO DIN EN 10204 JAN 2005 No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA (DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5 TRADE AGREEMENTS).

Plant Serial: 00025411

Kaiser Order Number: 223458



http://Online.KaiserAluminum.com

KAISER ALUMINUM FABRICATED PRODUCTS, LLC 6573 W. WILLIS ROAD CHANDLER, AZ 85226

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms &conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

TW METALS JUN 3 0 17

Plant Serial: 00025411

Kaiser Order Number: 223458

Benteler Steel/Tube GmbH

33043 Paderborn Postfach 13 40

Tel.: + 49.5254.81-0 Fax: + 49.5254.13666 **Deutschland**

[DIN EN ISO 9001, ISO/TS-16848 CENTIRED BY TUEV NORD CENT] PED 2014/68/EU CERTIFIED BY TUEV NORD SYSTEMS] Blatt: Page: Stahlerschmelzungsverfahren: E.ECTRC FURVACE Procedé d'élaboration de l'acier: FOUR E.ECTRQUE WA Warmrohw erk/Zieherei Stamp of the inspection representative: Stempel des Abnahmebeauftragten: Marque du producteur: Manufacturer's brand: Poinçon du contrôleur. Herstellerzeichen: No. du certificat: Inspection No.: Manufacturer Producteur. Hersteller. 46005343 TW M49371988 41-1026599/001/P SEAMLESS STEEL TUBES TUBES D' ACIER SANS SOUDLINE 4114983 1639142 NAHTLOSE STAHLROHRE No. de commande du client: No. de commande Benteler: No. d'avis d'expédition: Benteler Auftrags-Nr.: Versandanzelgen-Nr.: Dispatch Note No.: Purchase Order No.: Benteler Order No.: Kunden-Bestell-Nr.: Dokument-Nr.: No. du document: Document No.: Produkt: Product: Produit: Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICAT DE RECEPTION EN 10204-3.1 EN 10204:2005-01 The Aboretum, Suite 204 760 Constitution Drive EXTON PA 19341 USA TW Metals

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BENTELER \triangledown

Steel/Tube

AMS-T-6736B-08 Type 1, ASTM-A 519-2006(MIL-T-6736B)ype 1, AMS6360 Rev. M, AMS 2301K _ieferbedingungen; Terms of delivery:

AMS 2253E-83, Aircraft Type, Seamless, Cold Finished Maße - Toleranzen: Dimensions-tolerances:

Conditions de livraison:

GRADE 4130 Dimensions-tolérances: Stahlsorte:

_ieferzustand: Nuance d'acier: Steel grade:

Delivery condition:

Condition N

État de livraison:

FSD: BENTELER AMS6360M-AMS-T-6736 B 1-MIL-T-6736 B 1-AMS 2301K 4130 Condition N HEAT-NO. CD AQ S DIMENSIONS WA GERMANY Produktkennzeichnung:

Marquage du produit:

Product marking:

AEZ = Atzintenbecandrung, Etching ink marking, Gravine à l'encre . RA = Farbkennzachnung, color marking, marquage par couleur . FS = Farbschablonieung, paint stenciing, marquage par pointer. (Se = Escatembrandrung, lag marking, marquage eur eliqueit e . FS = Prégettempe, de stamp, marquage par pointormage . TS = Tintenatrabitembrandrung, ink jet spray marking, marquage eur eliqueit e . FS = Prégettempe, de stamp, marquage par pointormage . TS = Tintenatrabitembrandrung, ink jet spray marking, imprimante à jet

Vielfachlängen	Multiple lengths	Longueurs multiples			
Rohr-NrGruppe	Tube number group	Pression d'épreuve Série de no. des tubes			
Prüfdruck	Test pressure	Pression d'épreuve		1	
Schmelzen-Nr.	Heat No.	No. de coufée		606338	
Gewicht	Weight	Polds	lbs	1345	
Gesamtlänge Gewicht	Length total	Longueur totale	feet	3664,37	
			Tag.	149" WT	
				0.750" O.D. * 0.049" WT 20 FT - 24 FT	
Maße	Dimensions	Dimensions		0.750" O.D. *	
Stück Maße		Nombre	`	0012 153	
Pos.	Item	Poste		0012	

BY TW METALS ACCEPTED SEP 27 17 2

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BENTELER \triangledown

Steel/Tube

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Document-Nr.: Document No.: No. du document: ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICAT DE RECEPTION EN 10204-3.1

Prūf-Nr.: Inspection No.: No. du certificat: 41-1026599/001/P

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Schmelzen-Nr.

Pos.

Schmeizenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

0,08

0,18

06'0

0,002

900'0

0,53

0,220

0,320

No. de coulée

Poste

Heat No.

Item

0012 606338

0,07 Ī

0,18

0,90

0,002

0,007

0,53

0,230

0,310

No, de coulée

Poste

Heat No.

Item

0012 606338

Prüfergebnisse / Test results / Résultats des essais

Die Rohre wurden zerstörungsfrei geprüft:

Les tubes ont passé un essai non destructif:

Augensichtkontrolle:

Visual Inspection:

Examen visuel:

The tubes are non destructive tested:

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Schmelzen-Nr.

Pos.

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

0,10

ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections;

PASSED

Notch depth: 0,30 mm; notch width < = notch depth; notch length min. 2 x transducer ET-test: ET with rotating pancake colls; according to EN 10246-3; imperfections;

PASSED

Materialverwechslungsprüfung:

PASSED

width (max. 50 mm)

Vérification de la nuance:

Material conformity test:

PASSED

Maßkontrolle:

Dimensions examination:

Vérification des dimenslons:

Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachlängen.

The sampling was carried out on multiple lengths. Uechamillonage etait realise aux longueurs multiples.

Zugversuch längs bei RT, Voliprobe / Tensile test longitudinal at RT, Full section test specimen / Essal de traction longitudinale à TA, Eprouvette a section complete Dehnung Zugfestigkeit Streckgrenze Probenabmessung

1. Formel 1. Formula 1. Formule Résistance à la traction Allongement Elongation MIN 12.00 18,00 A2" Tensile strength MIN 95 126 쮼 KSI Limite élastique Yield strength Rp 0,2 % KSI MIN 75 115 1,26 Dimensions de l'éprouv. Specimen dimensions 19,05 X · E L Schmelzen-Nr. No. de coulée 606338 Heat No. No. de l'éprouv. Specimen No. Proben-Nr. Anforderungen Requirements Exigences

127

116

000002

0012

Poste

Pos.

CHCCE!-ACCEPTED BY TW METALS SEP. 2.7 17

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Benteler Steel/Tube GmbH

Postfach 13 40 33043 Paderborn

Tel.: + 49,5254.81-0 Fax: + 49,5254.13666 Deutschland

BENTELER 🛡

Steel/Tube

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3/ Blatt: Page: Page: Prof-Nr.: Inspection No.: No. du certificat: 41-1026599/001/P Dokument-Nr.: Document No.: No. du document: ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICAT DE RECEPTION EN 10204-3.1 Tel.: + 49.5254.81-0 Fax: + 49.5254.13666 Deutschland

Benteler Steel/Tube GmbH

33043 Paderborn Postfach 13 40

complete					1 Formel		1. Formula	1. Formule						
Eprouvette a section	Dehnung	0	Elongation	ion Allongement	Δ2"	10	*	MIN 12.00	000	19,00	19,00	0	73,00	
The section longitudinals a TA, Epocho (Targette a section complete	Zuofestinkeit	in the second second	Tensile strength	Résistance à la traction Allongement	0	= = =	KS.	SON		126	126		126	
section test specimen / Essa	Characteristics	Streckgreitze	Yield strength	l imite élastique	7000	% 7.0 Q	- N	MINTE	CANIM	116	21		117	
sest longitudinal at KT. Full		Probenabinessung	Specimen dimensions Yield strength	Dimensione de l'émoire l'imite élastique	חוופויפוסופ מפן כלום			E		19.05 X 1.26	; ;		19,05 X 1,26	
Volloroho / Tenelle	Volipiodo / Lensile	Schmelzen-Nr.	11-14	Heat No.	No. de l'éprouv. No. de course					855707	00000	606338	60633B	
To be being	ch langs belief	Prohon-Nr		Specimen No.	No. de l'éprouv.		rungen	unts		1	50000	00000	100000	20000
	Zugversu	200	So.	Item	Poste		Antorderungen	Requirements	Exigences		0012	0012		2100

Randentkohlung / Surface decarburization / Decarburation superficielle

Pos. / Item / Poste: 0012

decarburization outside and inside max. 0.012 in, partial decarburization outside and inside max. 0,305 mm, without total acc. to AMS-6360, partial decarburization outside max. 0.009 in, partial decarburization inside max. 0.009 in, partial decarburization; partial decarb. out. max.: 0,229 mm; partial decarb. ins. max.: 0,229 mm

Vermerk / Remark / Remarque

52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1. Pos. / Item / Poste: 0012

Pos. / Item / Poste: 0012

Macroscopic examination: acc. to ASTM-E381

Magnetic particle inspec.: acc. to AMS 2301K/ASTM-E1444, on prematerial Pos. / Item / Poste: 0012

Grain size: acc. to ASTM-E112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial Pos. / Item / Poste: 0012

Verkäufer(in) / Sales Personne / Personne chargée: Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391

Paderborn Schloß Neuhaus, 06.09.2017, TEL.: 05254.81-201768 FAX: 05254.81-201752

Es wird bestätigt, daß die gelieferten Ezzeugnisse den techn. Lieferbedingungen das Auftrages entsprechen Diasas Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig. We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature. Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.

Abnahmebeauftragter Inspection representative

I. A. THOMAS GOLLAN / Tat

ACCEPTED BY TW METALS SEP 2 7 17

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Benteler Steel/Tube GmbH Residenzstraße 1 Germany Tel.:49.5254.81-0 Fax: 49.5254.13886 33104 Paderborn

BENTELER V

Steel/Tube

Certificat de réception EN 10204-3.1 / appendice Inspection Certificate EN 10204.3.1 / appendix Abnahmeprüfzeugnis EN 10204-3.1./ Anhang

> Dokument-Nr.
> Document No.: No. de document:

41-1026599/001/P

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von 1 of 1 de

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fini: nuance 4130

 	Т		
Decarburization Depth	606338		Schmelzen-Nr. Heat No. Coulée No.
	012		Position Item Poste
Outside 0,000 mm Inside 0,000 mm	9-10	min. 5	Komgröße Grain size Grosseur de grain (ASTM-E 112)
Inside 0,000 mm	37	J(5/16") min. 35 HRC	Hartbarkeit (min. Anforderungen) Hardenability (min. raquirements) Trempabilité (exigence min.) (ASTM-A 255)
	ၓ္သ	J(8/16") min. 28 HRC	Hartbarkeit (min. Anforderungen) lardenability (min. requirements) Trempabilité (exigence min.) (ASTM-A 255)
	0,020	F max. 0,34	Magnetpu Magnetic part Essai à la pou (AMS 2301 K
	0,020	S max. 0,25	Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM- 1444)
	\$2	max. S 2	Ess
	R 1	max. R 1	Makroátzung Macrostructure test Essat de macrostructure (ASTM-E 381)
	C 2	max: C 2	test icture

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 06.09.2017 Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752

Inspection representative Controleur Abnahmebeauftragter

Thomas Gollan



Benteler Steel/Tube GmbH

Postfach 13 40 33043 Paderborn

Deutschland Tel.; + 49.5254.81-0 Fax: + 49.5254.13666

ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1

CERTIFICAT DE RECEPTION EN 10204-3.1 EN 10204:2005-01

Benteler Auftrags-Nr.: Purchase Order No.: Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Padarborn - Deutschland TW Metals

The Aboretum, Suite 204 760 Constitution Drive EXTON PA 19341 USA

No. du certificat: Prüf-Nr.: Inspection No.: Hersteller. 46004962TW M49365374 41-1007237/001/P

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Warmrohrwerk/Zieherei

Manufacturer.

BENTELER 🛡

Steel/Tube

DIN EN ISO 9001, ISO/TS-1 8949 CERTIFIED BY TUEV NOAD CERT] [PED 2014/88/EU CERTIFIED BY TUEV NOAD SYSTEMS] Marque du producteur. Manufacturer's brand: Herstellerzeichen: Producteur:

1634562

No. de commande du client:

Kunden-Bestell-Nr.:

Dokument-Nr.: Document No.: No. du document: 4195453

No. de commande Benteler.

Benteler Order No.:

Versandanzeigen-Nr.:

Dispatch Note No.:

× Stamp of the inspection representative: Stempel des Abnahmebeauftragten: Stahlerschmelzungsverfahren: Poinçon du contrôleur.

JUN 1 5 17 / 01 ACCEPTED 3C TW METAL.

Steelmaking process:

B.ECTRIC FURNACE
Procede d'élaboration de l'acier: FOUR BLECTRIQUE

ELECTRIC FURNACE

lype 1, AMS6360 Rev. M, AMS 2301K AMS-T-6736B-08 Type 1, ASTM-A 519-2006 MIL-T-6736B

TUBES D' ACIER SANS SOUDURE

NAHTLOSE STAHLROHRE SEAMLESS STEEL TUBES

Produkt: Product: Produit:

No. d'avis d'expédition:

Conditions de livraison: Terms of delivery:

Lieferbedingungen:

AMS 2253E-83, Aircraft Type, Seamless, Cold Finished

Dimensions-tolerances:

Maße - Toleranzen:

Dimensions-tolérances:

GRADE 4130 Stahlsorte: Steel grade:

Lieferzustand: Nuance d'acier.

Condition N

Delivery condition:

État de livraison:

FSD: BENTELER AMS6360M-AMS-T-6736 B 1-MIL-T-6736 B 1-AMS 2301K 4130 Condition N HEAT-NO CD AQ S DIMENSIONS WA GERMANY Produktkennzeichnung:

Marquage du produit:

Product marking:

AEZ = Atzinterbeschriftung, Etching ink making, Gravure & Ferbkennzeichrung, color marking, marquage per couleur . PS = Ferbschablorierung, paint stencilling, marquage per perintung, color marking, marquage per color per printung, taser marking, Marquage laser . PK = Etkettenkennzeichnung, tag marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per poinçonnage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per poinçonnage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per poinçonnage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per perinting in the partieur sur la serie marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per poinçonnage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage per poinçonnage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage . TS = Thitenstrailkennzeichnung, int jet spray marking, marquage sur étiquette . PS = Pragestempel, de stamp, marquage . TS = Thitenstraillennzeichnung, int jet spray marking, marquage sur étiquette sur la serie marking, marquage sur étiquette sur la serie marking, marquage sur étiquette sur la serie marking.

zen-Nr. Prufdruck Konr-NrGruppe	No. Test pressure Tube number group Multiple lengths	No, de coulée Pression d'épreuve Série de no. des tubes Longueurs multiples		114		
	Waight Heat No.	Poids No. de	lbs	1080 603114	_)
Gesamtlange Gewicht	Length total	Longueur totale F	feet	1851,05		
Maße	Number Dimensions	Dimensions	teed	(0.750" O.D. * 0.083" WT	20 FT - 24 FT	
Pos. Stück	Item Number	Poste Nombre		0012 91		

Benteler Steel/Tube GmbH Postfach 13 40 33043 Paderborn Deutschland Tel.: + 49.5254.13666

BENTELER 🛡

Steel/Tube

INSPECT									-	,				
CERTIFIC	INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICAT DE RECEPTION EN 10204-3.1	N 10204-3.1	10701	-	Document No.: No. du document:	: ent:				Inspection No.: No. du certificat:		Page:	7	
Schmel	${\sf Schmelzenanalyse}$ [%] / Heat analysis [%] / Analyse sur coul	/ Heat analysi	s [%] / Analys	se sur coulée	ée [%]									
Pos.	Schmelzen-Nr.	ပ	SI	Z	۵	S	S	MO	Z	CU				
Item	Heat No.									0.				
Poste	No. de coulée													
0012	603114	0,310	0,240	0,56	0,005	0,001	0,87	0,17	0,08	11,0				
Produk	Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]	oduct analysis	f%1/ Analys	e sur produí	t [%]									
Pos	Schmelzen-Nr													
Item	Heat No.	U	Si	Z	۵	s	S	MO	Z	CO				
Poste	No. de coulée													
0012	603114	0,300	0,230	0,53	900'0	0,001	0,87	0,17	0,08	0,11				
Prūferg	Prūfergebnisse / Test results / Résultats des essais	ults / Résultat	s des essais		٠									
Die Ro	Die Rohre wurden zerstörungsfrei geprüft:	törungsfrei	geprüft:		ET-test: acc	c. to ASTM	-A 450; ET	- Test met	hod: acc. t	ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections;	ections;	PASSED	A	
The tub	The tubes are non destructive tested:	re tested:			ET-test: ET	with rotati	ng pancake	coils; acco	ording to B	ET-test: ET with rotating pancake coils; according to EN 10246-3; Imperfections;				
Les tube	Les tubes ont passé un essai non destructif:	i non destruct	ij.		Notch depth: 0,30 m width (max. 50 mm)	h: 0,30 mn . 50 mm)	ı; notch wie	th < = no	tch depth;	Notch depth: 0,30 mm; notch width < = notch depth; notch length min. 2 x transducer width (max. 50 mm)	sducer			
Augen	Augensichtkontrolle:		PASSED	SED	Materialverwechslungsprüfung:	w echslung	sprüfung:	PAS	PASSED	Maßkontrolle:		PASSED	A	
Visual in	Visual inspection:				Material conformity test:	ormity test:				Dimensions examination:				
Examen visuel:	visuel:				Vérification de la nuance:	la nuance:				Vérification des dimensions:				
Ergebn	Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Resultats des essais mécaniques	ischen Prüf	ung / Result	s of mechan	ical testing / Ré	sultats des es	ssais mécaniqu	· sa				T.	TW METAL	Je.
Die Pro	Die Probennahme erfolgte an Vielfachlängen.	gte an Viel	fachlänger	٦.										K'U
The san	The sampling was carried out on multiple lengths. L'echantillonage etait realise aux longueurs multiples.	at on multiple	lengths. rs multiples.	¥								Nor-	JUN 1 5 17	400
Zugver	such längs bei R	T, Voliprob	e / Tensile te	sst fongitudir	nai at RT, Full se	ection test spa	ecimen / Essai	de traction lo	ngitudinale å	Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Eprouvette a section complete	ø.	ACC	ACCEPTED	D
Pos.	Proben-Nr.		Schmelzen-Nr.	Probena	Probenabmessung	Streckgrenze	nze	Zı	Zugfestigkeit	t Dehnung				
Item	Specimen No.	. Heat No.	ć	Specimen	Specimen dimensions	Yield strength	£	Te	Tensile strength	n Elongation				

1. Formel 1. Formula 1. Formule

A2" %

쮼 XS. MIN 12.00 20,00

MIN 95 123

Résistance à la traction Allongement

Limite élastique

Dimensions de l'éprouv.

No. de coulée

No. de l'éprouv. Specimen No.

Poste No. de Anforderungen Requirements Exigences 0012 0012

Rp 0,2 % KSI MIN 75 103

mm m

2,12

19,04 X 19,04 X

603114

000001

Benteler Steel/Tube GmbH Postfach 13 40 33043 Paderborn

33043 Paderborn Deutschland Tel.: + 49,5254,81-0 Fax: + 49,5254.13666

BENTELER 🛡

Steel/Tube

3

3/ Blatt: Page: Page: Prūf-Nr.: Inspection No.: No. du certificat: 41-1007237/001/P Dokument-Nr.: Document No.: No. du document: ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICAT DE RECEPTION EN 10204-3.1

Lugversuc	Zugversuch längs bei RT, Vollprobe	Vollprobe / Tensile te	est longitudinal at RT, Full s	Zugversuch längs bei RT, Vollprobe / Tensile test kongitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Eprovvette a section complete	tion longitudinale à TA, Epn	ouvette a section comple	fe
	Specimen No.	Schmelzen-Nr.	Specimen dimensions Yield strength	Streckgrenze Yield strength	Zugrestigken Tensile strength	Dermung	
	No. de l'éprouv. No. de coulée	No. de coulée	Dimensions de l'éprouv. Limite élastique	Limite élastique	Résistance à la traction Allongement	Allongement	
rder	Anforderungen			Rp 0,2 %	동	A2"	1. Formel
Requirements	ıts		an.	KSI	KSI	%	1. Formula
Exigences				MIN 75	MIN 95	MIN 12.00	1. Formule
0012	00000	603114	19,04 X 2,12 102	102	123	18,00	

Randentkohlung / Surface decarburization / Décarburation superficielle

decarburization outside and inside max. 0.018 in, partial decarburization outside and inside max. 0,457 mm, without total acc. to AMS-6360, partial decarburization outside max. 0.014 in, partial decarburization inside max. 0.014 in, partial decarburization; partial decarb. out. max.: 0,356 mm; partial decarb. Ins. max.: 0,356 mm

Vermerk / Remark / Remarque

52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1. Macroscopic examination: acc. to ASTM-E381

Grain size: acc. to ASTM-E112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial Magnetic particle inspec.: acc. to AMS 2301K/ASTM-E1444, on prematerial

Verkäufer(in) / Sales Personnel / Personne chargée:Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391

Abnahmebeauftragter Inspection representative

Contrôleur

Es wird bestätigt, daß die gelieferten Ezeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittals EDV erstellt und ist ohne Unterschrift rechtsgültig. We certlify that the supplied products comply with the order specification. This document was prepared by means of electronic data processing and is valid without signature. Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature. i. A. THOMAS GOLLAN / Tat

Paderborn Schloß Neuhaus, 28.05.2017, TEL.: 05254.81-201768 FAX: 05254.81-201752



Benteler Steel/Tube GmbH

Residenzstraße 1 33104 Paderborn

Germany Tel.:49.5254.81-0.Fax: 49.5254.13666

Abnahmeprüfzeugnis EN 10204-3.1 / Anhang

Inspection Certificate EN 10204.3.1 / appendix

Certificat de réception EN 10204-3.1 l'appendice

Document No.: Dokument-Nr.

No. de document:

41-1007237/001/P

BENTELER V

Steel/Tube

1 of 1 VON

Blatt: Page: Page:

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fini: nuance 4130

max. C 2	C.5		
max. R.1	R 1		
тах. S 2	82		
S max. 0,25	0,015		
F max. 0,34	0,020		
J(8/16") min. 28 HRC	32		
J(5/16') min. 35 HRC	40	Inside 0,000 mm	
min. 5	6	Outside 0,000 mm.	
	012		
	603114	Decarburization Depth	
	J(5/16°) J(8/16°) F max 0,34 S max 0,25 max S 2 max R 1 min 35 HRC min .28 HRC	min. 5 J(6/16°) J(8/16°) F max. 0,34 S max. 0,25 max. S 2 max. R 1 min. 28 HRC min. 28 HRC S max. 0,050 0,015 S 2 R 1	min. 5 J(5/16°) J(8/16°) F max. 0,34 S max. 0,25 max. S 2 max. R 1 012 9 40 32 0,020 0,015 S 2 R 1 Outside 0,000 mm. Inside 0,000 mm

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 29.05.2017 Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752



Abnahmebeauftragter Inspection representative Controleur

Thomas Gollan

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M4130NTO.750W.083</u> DATE: <u>DEC 8 5 2017</u>	PO/BATCH NO.: 038420 5017143
MATERIAL CERT REC'D: QUANTITY RECEIVED: QUANTITY INSPECTED: QUANTITY REJECTED:	THICKNESS ORDERED: 750 THICKNESS RECEIVED: 750 SHEET SIZE ORDERED: NA SHEET SIZE RECEIVED: 1/A

DESCRIPTION	(Cr	CR leck (N)	COMMENTS
SURFACE DAMAGE	Y	(N)	
CORRECT FINISH	(8)	N	
CORROSION	Y	(N)	
CORRECT GRAIN DIRECTION	(Y)	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	mil-167360
CORRECT THICKNESS	(Y)	N	
PHOTO REQUIRED	Υ	M	
CORRECT REF # TO LINK CERT	Y	N	Heat \$1 603114
CORRECT MATERIAL IDENTFICATION	(Y)	N	7
CORRECT M# ON THE MATERIAL	M	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	M	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	(S)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
					LWEDOTED
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if require	red)
INSPECTED BY:	DAS 9	SIGNED OFF BY:	
DATE:	DEC 0.5 2017	DATE:	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

RP

REV. B SHEET 1 OF 1 01.05.16 DATE 12.04.02 DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. W4130N-T SHEE REFORMAT DWG TO ACCOMODATE ADDITIONAL TUBE DIAMETERS AND WALL THICKNESS STEEL TUBING DESCRIPTION B R B DESIGN JB
DRAWN RP
CHECKED A.C
MFG. APPR. C.C
APPROVED
DE APPR.
DE APPROVED
DE APPR.
DATE 12.04.02 NEW ISSUE REV.

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING SPECIFICATION: MIL-T-6736 DR AMS 6371, 6360, 6361, 6362, 6373, 6374

0

SPECIFICATION CONTROL DRAWING

PART NUMBER:

O

M4130N |TD.DDD |W.TTT |

DIA. WALL

WHERE: "D.DDD" = OUTER DIAMETER (IN INCHES)
AND ".TTT" = WALL THICKNESS (IN INCHES)

EG. 3/4" TUBING WITH .035" WALL = M4130NT0.750W.035

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M4/30x 70.750w-049</u> DATE: <u>DEC 0 5 2017</u>	PO/BATCH NO.: 038420/5017142
QUANTITY REJECTED: QUANTITY REJECTED: QUANTITY REJECTED:	THICKNESS ORDERED: 750 THICKNESS RECEIVED: 750 SHEET SIZE ORDERED: V/A SHEET SIZE RECEIVED: V/A

	NC	R	
DESCRIPTION	(Ch	eck	COMMENTS
	Y/	N)	
SURFACE DAMAGE	Y	N	
CORRECT FINISH	8	N	
CORROSION	Υ	(N)	
CORRECT GRAIN DIRECTION	(2)	N	
CORRECT MATERIAL PER M-DRAWING	(4)	N	mil-t-6736B
CORRECT THICKNESS	(Y)	Ν	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT		N	Hext # 606338
CORRECT MATERIAL IDENTFICATION	(7)	Ν	
CORRECT M# ON THE MATERIAL	(Y)	N	
DOES THIS MATERIAL REQUIRE		0	
ENGINEERING SIGN OFF	Υ	(N)	
DOES THIS REQUIRE AN			
EXTRUSION REPORT	Y	M)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.					
RECORD RESULTS BELOW					
HRC HRB DUR A DUR D WEBSTER					WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY: _	Al DAS	SIGNED OFF BY:
DATE:	DEC 0-5 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

FLEASE 2012 -04- 16

REV. B 12.04.02 01.05.16 DATE DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA
DRAWING NO.
M4130N-T JB 8Y R. REFORMAT DWG TO ACCOMODATE ADDITIONAL TUBE DIAMETERS AND WALL THICKNESS' DESCRIPTION B CA CA DESIGN JB
DRAWN RP
CHECKED A.C
MFG. APPR.
APPROVED
DE APPR.
DE APPR.
DE APPR.
DATE 12.04.02 NEW ISSUE

SHEET 1 OF 1 SCALE

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> The populating Private Ave confedence, NOT 10 EL USED FOR AVE PURPOSE ON COPIES WITTEN PERVISES ON

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING
SPECIFICATION: MIL-T-6736 OR AMS 6371, 6360, 6361, 6362, 6373, 6374

M4130N TD.DDD W.TTT DIA. WALL PART NUMBER:

O

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SPECIFICATION CONTROL DRAWING

WHERE: "D.DDD" = OUTER DIAMETER (IN INCHES)
AND ".TTT" = WALL THICKNESS (IN INCHES)

EG. 3/4" TUBING WITH .035" WALL = M4130NT0.750W.035

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M606 17670.625 W.125</u> DEC 11 5 2017	PO/BATCH NO.: 038420 /SO17140
QUANTITY RECEIVED: 12' QUANTITY INSPECTED: 12' QUANTITY REJECTED: 12'	THICKNESS ORDERED: 0.625 THICKNESS RECEIVED: 0.625 SHEET SIZE ORDERED: NA

DESCRIPTION	(Ch	CR leck (N)	COMMENTS
SURFACE DAMAGE	Υ	N	
CORRECT FINISH	(1)	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	(0)	N	,
CORRECT MATERIAL PER M-DRAWING	(8)	N	Ams-WW-T-700/6C
CORRECT THICKNESS	8	N	
PHOTO REQUIRED	Υ	N	
CORRECT REF # TO LINK CERT	(9)	Ň	Hest It 4002436350002
CORRECT MATERIAL IDENTFICATION	8	N	
CORRECT M# ON THE MATERIAL	(\aleph)	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	(3)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	\overline{z}	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.						
RECORD RESULTS BELOW						
HRC HRB DUR A DUR D WEBSTER						
TYPE OF MATERIAL						
SIZE OF TEST SAMPLE						
HARDNESS / DUROMETER READING						

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY:	pe DAS	SIGNED OFF BY:
DATE:	DEC 05 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

O 00 0 REV. C SHEET 1 OF 1 SCALE COPYRIGHT © 2001 BY DAKT AEROSPACE LTD his popular is remark and constraint. Also a survices on his presence country that it is not the basis for why hap out on combined to confluence to the historial whour 13.08.12 AJS ELEASE 2013 -07-02 COMPLETE REFORMAT, ADDED T8510 & T8511.

ADDED AMS 4083. ASTM B210 & ASTM B241

ADDED MATERIAL TOLERANCE

ADD GQ-A-2008 & QQ-A-2568

A NEW ISSUE

REV. mue 6061-T6 TUBING TIT-AJS DATE 13.06.12 CHECKED
MFG. APPR.
APPROVED
DE APPR. - DODD -DESIGN EG. 3/8" OD X 0.058 WALL = M6061T6T0.375W0.058 WW-T-7006 OR OCA-2006 OR OCA-226/8 OR AMS 4080 OR AMS 4082 OR AMS 4083 OR ASTM B210 OR ASTM B241 PURCHASE MATERIAL: 8081-T8/T62/T6510/15 SEAMLESS TUBING WHERE 'D. DDDD' = OD IN INCHES "T.TTT" = WALL THICKNESS M6061T6T|D.DDD|W|T.TTT | OD | WALL PER ANSI H35.2 🔼 MATERIAL TOLERANCE: SPECIFICATION: PART NUMBER: ۵ O

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M6061+6+0.325w.058</u> DATE: <u>DFC 0 5 2017</u>	PO/BATCH NO.: <u>038420/5017140</u>
MATERIAL CERT REC'D: QUANTITY RECEIVED: QUANTITY INSPECTED: QUANTITY REJECTED:	THICKNESS ORDERED: .375 THICKNESS RECEIVED: .375 SHEET SIZE ORDERED: .//A SHEET SIZE RECEIVED: .//A

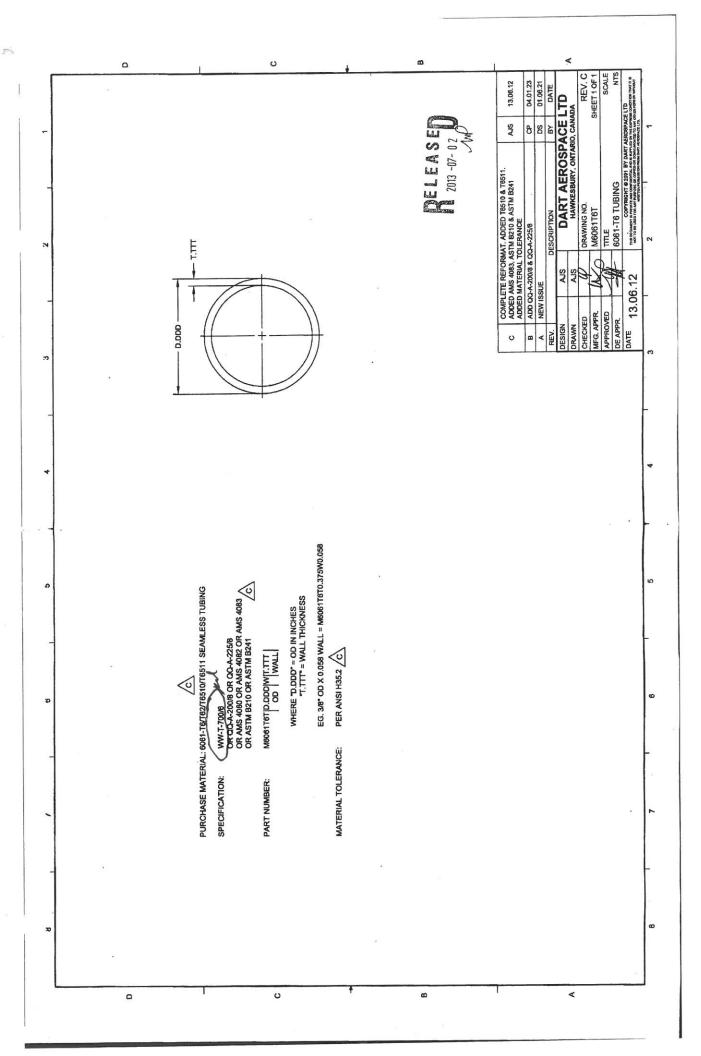
DESCRIPTION	(Ch	CR leck (N)	COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	(N	
CORROSION	Y	(M)	
CORRECT GRAIN DIRECTION	(2)	N	,
CORRECT MATERIAL PER M-DRAWING	(V)	N	Am5-WW-T-700/6C
CORRECT THICKNESS	(0)	N	
PHOTO REQUIRED	Y	(1)	
CORRECT REF # TO LINK CERT	M	N	Heat # f002504860001
CORRECT MATERIAL IDENTFICATION	8	N	
CORRECT M# ON THE MATERIAL	8	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	(E)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	M	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.							
RECORD RESULTS BELOW							
HRC HRB DUR A DUR D WEBSTER							
TYPE OF MATERIAL							
SIZE OF TEST SAMPLE							
HARDNESS / DUROMETER READING							

testers located in the Quality Office

(QC 18 INSPECTION		ENGINEERING SIGNO	FF (if required)
	INSPECTED BY:	DAS 9	SIGNED OFF BY:	
L	DATE:	DFC 0 5 2017	DATE:	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



MATERIAL RECEIPT INSPECTION FORM

MATERIAL: _ DATE: _	<u>160617670.625w.065</u> DEC 0 5 2017	PO/BATCH NO.: <u>038420/501713</u> 9
MATERIAL CERT REC'D:	Yes	THICKNESS ORDERED: 0-625
QUANTITY RECEIVED:	36"	THICKNESS RECEIVED: 6.625
QUANTITY INSPECTED:	36"	SHEET SIZE ORDERED:
QUANTITY REJECTED:	0	SHEET SIZE RECEIVED:

DESCRIPTION	(Ch	CR leck (N)	COMMENTS
SURFACE DAMAGE	Y.	(N)	
CORRECT FINISH	8	N	
CORROSION	Y	(N)	
CORRECT GRAIN DIRECTION	(0)	N	. /
CORRECT MATERIAL PER M-DRAWING	8	N	U/W-T-700/Ge
CORRECT THICKNESS	(A)	N	
PHOTO REQUIRED	Υ	(N)	, ,
CORRECT REF # TO LINK CERT	(3)	N	Hast # f002408380002
CORRECT MATERIAL IDENTFICATION	M	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	(N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	(A)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW								
HRC HRB DUR A DUR D WEBSTER								
TYPE OF MATERIAL								
SIZE OF TEST SAMPLE								
HARDNESS / DUROMETER READING	HARDNESS / DUROMETER READING							

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY:	pul BAS	SIGNED OFF BY:
DATE:	DEC 0.5 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

ALS DART AEROSPACE LTD

ALS DART AEROSPACE LTD

AUS HAWKESBURY, ONTARIO, CAMADA

MG061176T

MG061176T

MELE

G081-16 TUBING 0 O 13.06.12 AJS ELEASE 2013 -07-02 COMPLETE REFORMAT. ADDED T65:0 & T651.
ADDED AMS 4093. ASTM 8210 & ASTM 8241
ADDED MATERIAL TOLERANCE
ADD GO-A-Z008 & QG-A-Z256
NEW ISSUE COPYREGI THE DOCUMENT IS PRINTE AND NOT TO BE USED FOR ANY PURE ET.I AJS DATE 13.06.12 REV.
DESIGN
DRAWN
CHECKED
MFG. APPR.
APPROVED
DE APPR. - DODD -EG. 3/8" OD X 0.058 WALL = M6061T6T0.375W0.058 ۵ (WW-T-700B) PA-2256 OR CO-A-2008 OR AMS 4062 OR AMS 4083 OR AMS 4080 OR ASTM B210 OR ASTM B241 PURCHASE MATERIAL: 6061-T6/T62/T65/10/15/11 SEAMLESS TUBING WHERE "D.DDD" = OD IN INCHES "T.TTT" = WALL THICKNESS M6061T6T|D.DDD|W|T.TTT | OD | WALL| PER ANSI H35.2 C MATERIAL TOLERANCE: SPECIFICATION: PART NUMBER: ۵

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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: ¿ DATE: _	M304tro.500w.049 BEC 8 5 2017	PO / BATCH NO.:	038420/5017138
MATERIAL CERT REC'D:	Ves	THICKNESS ORDERED:	.500
QUANTITY RECEIVED:	40"	THICKNESS RECEIVED:	.500
QUANTITY INSPECTED:	40'	SHEET SIZE ORDERED:	NA
QUANTITY REJECTED:	Ø	SHEET SIZE RECEIVED:	NA

DESCRIPTION	(Ch	CR eck (N)	COMMENTS
SURFACE DAMAGE	Υ	N	
CORRECT FINISH	0	N	
CORROSION	Y	(1)	
CORRECT GRAIN DIRECTION	(1)	N	
CORRECT MATERIAL PER M-DRAWING	8	N	Astm A213-15C
CORRECT THICKNESS	8	N	
PHOTO REQUIRED	Y	(3)	
CORRECT REF # TO LINK CERT	(Y)	N	# YX 1604531
CORRECT MATERIAL IDENTFICATION	8	N	
CORRECT M# ON THE MATERIAL	8	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	3	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	(z)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.							
RECORD RESULTS BELOW							
HRC HRB DUR A DUR D WEBSTER							
TYPE OF MATERIAL							
SIZE OF TEST SAMPLE							
HARDNESS / DUROMETER READING							

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY: 1	J DAS	SIGNED OFF BY:
DATE:	DEC 0 5 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

DELEASE

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THS DOCUMENT IS PRIVATE AND COMPURENCE AND IS SEPTICED ON THE REPRESENCE OF THE BUTTO BE USED FOR ANY PLANCES ON COMPUNED TO ANY OTHER PRESENCE. DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. M304TR DS BY CP 304/316 ROUND TUBING B REFORMAT DWG, ADD SPECS (ZN D8-1), TITLE DE APPROVED AND DE APPROVED DATE 08.10.20 NEW ISSUE MFG. APPR. CHECKED DESIGN REV.

PURCHASE MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING
SPECIFICATION:
ASTM A213 OR ASME SA213 OR ASTM A269
WALL THICKNESS TOLERANCE PER ASTM A269 AS FOLLOWS:

8

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SPECIFICATION CONTROL DRAWING

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OD (IN)
UP TO 1%, EXCL. 40.015
1/3 TO 5%, EXCL. 40.015
5/3 TO 8, EXCL. 40.030
1/3 TO 8, EXCL. 40.030
1/4 TO 8, EXCL. 40.030

M304TR|D.DDD|W|.TTT | OD | WALL

PART NUMBER:

U

WHERE "D.DDD" = OUTSIDE DIAMETER IN INCHES AND "TTT" = WALL THICKNESS IN INCHES

EG. 0.375" OD X 0.065" WALL TUBING = M304TR0.375W.065

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: <u>M304</u> DATE:			
MATERIAL CERT REC'D: QUANTITY RECEIVED: QUANTITY INSPECTED: QUANTITY REJECTED:	5		THICKNESS ORDERED: 0.750 THICKNESS RECEIVED: 0.750 SHEET SIZE ORDERED: N/A SHEET SIZE RECEIVED: N/A
DESCRIPTION	(Ch	CR leck (N)	COMMENTS
SURFACE DAMAGE	Υ	(N)	
CORRECT FINISH	8	N	
CORROSION	Υ	O	
CORRECT GRAIN DIRECTION	0	N	
ORRECT MATERIAL PER M-DRAWING	(8)	N	Astm A213-15C
CORRECT THICKNESS	8	N	
PHOTO REQUIRED	Υ	(N)	
CORRECT REF # TO LINK CERT	(Y)	Ň	Heat # YX1108593
DRRECT MATERIAL IDENTFICATION	8	N	
CORRECT M# ON THE MATERIAL	(0)	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	3	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW							
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING							

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY:	pel DAS	SIGNED OFF BY:
DATE:	DEC 0 5 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

DOES THIS REQUIRE AN EXTRUSION REPORT

SPECIFICATION CONTROL DRAWING

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SPECIFICATION: PURCHASE MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING ASTM A213 OR ASME SA213 OR ASTM A269

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WALL THICKNESS TOLERANCE PER ASTM A269 AS FOLLOWS:

OD (IN)
UP TO ½
% TO 1½, EXCL.
1½ TO 3½, EXCL.
3½ TO 5½, EXCL.
5½ TO 8, EXCL. PERMISSABLE PERMISSABLE

OD TOL.(IN) WALL TOL.

±0.005 ±15%

CL. ±0.005 ±10%

CCL. ±0.015 ±10%

CL. ±0.015 ±10%

CL. ±0.030 ±10%

CL. ±0.030 ±10%

WHERE "D.DDD" = OUTSIDE DIAMETER IN INCHES AND ".TTT" = WALL THICKNESS IN INCHES

PART NUMBER:

M304TR D.DDD W.TTT

EG. 0.375" OD X 0.065" WALL TUBING = M304TR0.375W.065

CHECKED MFG. APPR. APPROVED DESIGN DATE DE APPR REV. REFORMAT DWG, ADD SPECS (ZN D8-1). REF PAR 08-020A 08.10.20 M304TR 304/316 ROUND TUBING DART AEROSPACE LTD COPYRIGHT © 2001 BY DART AEROSPACE LTD IS PRIVATE AND COMPONENT AND IS SUPER BO ON THE EXPRESS COMMONDY THAT IT IS DO NOT ANY ARROSS OF COMMONDATION OF THE PERSON WITHOUT THE ARROSS AND ARROSS OF THE COMPONDENT OF THE PERSON WITHOUT THE ARROSS AND ARROSS OF THE PERSON WITHOUT THE THE PERSON WITH PERSON HAWKESBURY, ONTARIO, CANADA CP BY DS SHEET 1 OF 1 08.10.20 01.06.08 DATE REV. B SCALE A

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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130NT1. DATE: DEC. 1.5	,
MATERIAL CERT REC'D: Ves QUANTITY RECEIVED: 20' QUANTITY INSPECTED: 20' QUANTITY REJECTED:	THICKNESS ORDERED: THICKNESS RECEIVED: SHEET SIZE ORDERED: SHEET SIZE RECEIVED:

DESCRIPTION		CR leck (N)	COMMENTS
SURFACE DAMAGE	Y, (N)		
CORRECT FINISH	0	N	
CORROSION	Υ	N	
CORRECT GRAIN DIRECTION	(8)	N	
CORRECT MATERIAL PER M-DRAWING		N	mil-16736B
CORRECT THICKNESS	(V)	N	• 10 10 10 10 10 10 10 10 10 10 10 10 10
PHOTO REQUIRED	Y	(1)	
CORRECT REF # TO LINK CERT	8	N	Heat # 606333
CORRECT MATERIAL IDENTFICATION	8	N	
CORRECT M# ON THE MATERIAL	8	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Υ	(E)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Υ	(Z)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING		2 M C 0 W - 1 1 2 2 2 2			

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY:_	pd DAS	SIGNED OFF BY:
DATE:	DEC 0 5 2017	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

DELEASE 10 2012 -04- 16

SHEET 1 OF 1 JB 01.05.16 BY DATE REV. B 12.04.02 DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA
DRAWING NO.
M4130N-T RP B REFORMAT DWG TO ACCOMODATE ADDITIONAL TUBE DIAMETERS AND WALL THICKNESS: DESCRIPTION D B 목문 NEW ISSUE DESIGN
DRAWN
CHECKED
MFG. APPR.
APPROVED
DE APPR.
DATE
12 REV.

NTS

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THE DOCUMENT IS PREVATE AND GENERAL HOT TO BE URED FOR ANY PRINCIPLE ON COPIETY TITLE STEEL TUBING

12.04.02

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING

MIL-T-6736 DR AMS 6371, 6360, 6361, 6362, 6373, 6374 SPECIFICATION:

TTT M ddd.dT M4130N TTT PART NUMBER:

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WHERE: "D.DDD" = OUTER DIAMETER (IN INCHES)
AND ".TTT" = WALL THICKNESS (IN INCHES)

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SPECIFICATION CONTROL DRAWING

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DIA. WALL

EG. 3/4" TUBING WITH .035" WALL = M4130NT0.750W.035